

## CLAIMS

What is claimed is:

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1. A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

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preparing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-*trans*, *trans*-hexadiene moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal; and

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applying said composition to a surface of said metal, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface.

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2. The method of claim 1, wherein said 2,4-*trans*, *trans*-hexadiene moiety is in the form of a 2,4-*trans*, *trans*-hexadienoic anion.

3. The method of claim 1, wherein said preparing and applying steps comprise the steps of:

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preparing an anti-corrosion solution, said solution comprising an effective amount of an anti-corrosion agent in a polar solvent, said agent comprising a 2,4-*trans*, *trans*-hexadiene moiety;

applying said solution to a surface of said metal; and

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subsequently applying a moisture retentive barrier over said surface.

4. The method of claim 1, wherein in said preparing step, said anti-corrosion agent and said material capable of forming a

moisture retentive barrier over a surface of said metal are both provided in powdered form to produce said composition.

5     The method of claim 1, wherein in said preparing step, said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce a powdered composition; and wherein in said applying step, said powdered composition is applied to a surface of said metal by powder metallurgy  
10    processing.

15    The method of claim 1, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance.

20    The method of claim 1, wherein said composition further comprises any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, an organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension.

25    The method of claim 1, wherein said anti-corrosion agent is packaged for delayed release.

30    The method of claim 8, wherein said anti-corrosion agent is encapsulated.

10.   The method of claim 1, wherein in said composition, said anti-corrosion agent is present at a concentration of between 0.2 and 58 percent by weight.

11. The method of claim 1, wherein said composition is first prepared in concentrated form and then diluted.

12. The method of claim 1, said method further comprising,  
5 following said applying step, the step of applying a further coating layer over said surface.

13. The method of claim 12, wherein said further coating layer is applied by a process selected from the group consisting of  
10 painting, electro-plating and electro-polishing.

14. The method of claim 1, wherein said applying step comprises using said composition as a lubricant for a surface of said metal.

15. The method of claim 1, wherein said applying step comprises using said composition as a pump oil or brake fluid.

16. A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

20 providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;  
preparing an anti-corrosion solution, said solution comprising an effective amount of an anti-corrosion agent dissolved in a polar solvent, said agent comprising a 2,4-trans,  
25 trans-hexadiene moiety; and  
continuously immersing said metal or said device in said solution.

17. A method for preventing oxidative degradation of a  
30 substance, said method comprising the steps of:

preparing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a 2,4-trans, trans-hexadiene moiety, said

composition further comprising a material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation; and

5 mixing said composition with a preparation of said substance.

18. The method of claim 17, wherein said substance is a grain product.

10 19. The method of claim 17, wherein said substance is a plastic material.

20. A composition for preventing oxidative corrosion of a metal, said composition comprising:

15 an effective amount of an anti-corrosion agent, said agent comprising a 2,4-*trans*, *trans*-hexadiene moiety; and

a material capable of forming a moisture retentive barrier over a surface of said metal.

20 21. The composition of claim 20, wherein said 2,4-*trans*, *trans*-hexadiene moiety is in the form of a 2,4-*trans*, *trans*-hexadienoic anion.

22. The composition of claim 20, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce said composition.

23. The composition of claim 20, wherein said composition is powdered in final form and is capable of being applied to a surface of said metal by powder metallurgy processing.

24. The composition of claim 22, wherein said composition is liquid or viscous in final form.

25. The composition of claim 20, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance.

26. The composition of claim 20, further comprising any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, an organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension.

27. The composition of claim 20, wherein said anti-corrosion agent is packaged for delayed release.

28. The composition of claim 27, wherein said anti-corrosion agent is encapsulated.

29. The composition of claim 20, wherein said anti-corrosion agent is present at a concentration of between 0.2 and 58 percent by weight.

30. The composition of claim 20, wherein said anti-corrosion agent is present at a concentration of greater than 20 percent by weight.

31. The composition of claim 20, wherein said composition is in the form of a gel, a colloidal suspension or a foam.